ABSTRACT

RESEARCH PAPER: Surface Characterization and Infrared Emission from AlN:Tm Film

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Rare-earth elements contain rich structure in energy levels, ready to be exploited in structural, electronic, and optical applications. In optics, some of rare-earth elements contain long life time metastable states, which are used in laser and light amplifiers. Rare-earth ions in these applications are usually doped into silica glass, amorphous silicon, polycrystalline silicon and single crystal semiconductors. In this paper, we examine doped crystalline film of semiconductors, and characterize its crystallological and optical properties via X-ray diffraction and photoluminescence measurements. A bright, sharp response in emission spectra indicates that the film can be applied in future optical devices for optical relaying and amplification.